Determination of Livestock Grazing Capability and Suitability Report

Introduction

The National Forest Management Act of 1976 (NFMA) states that national forest plans shall provide for multiple use and sustained yield of products and services through management of renewable surface resources to best meet the needs of the American people. Further, Section 6 of NFMA calls for identification of the suitability of lands for resource management.

Procedures in the 1982 planning rule require that the capability and suitability for producing forage for grazing animals on National Forest System lands be determined during forest planning. Capability depends upon conditions such as climate, slope, landform, soils, and geology. Suitability is the appropriateness of applying certain resource management practices to a particular area of land, in consideration of the relevant social, economic, and ecological factors.

The Analysis of the Management Situation (Forest Service, 1983) and the Final Environmental Impact Statement (Forest Service, 1986) document the analysis of grazing capability and suitability for the 1987 Forest Plan (Forest Service, 1987).

For the proposed revised plan, the results of the grazing capability and suitability analysis are presented in the sections that follow. Lands within the Prescott NF were reassessed using U.S. Geologic Survey (USGS) slope information, Terrestrial Ecosystem Survey (TES) information, and corporate Geographic Information System (GIS) acreage figures (that were unavailable in the original analysis).

Capability

Capability is the potential of an area of land to produce resources, supply goods and services, or allow resource uses under an assumed set of management practices at a given level of management intensity.

Capable grazing lands refer to the sum of all lands classified as having full or potential grazing capability for domestic livestock. A large portion of the capability determination is based upon factors such as landform, geology, slope, and climate. These have not changed significantly since the previous evaluation undertaken for the 1987 Forest Plan. Current drought conditions and trends have not been shown to be outside of historical norms for the Southwest.

TES information is now used during grazing allotment analysis. For this analysis, three measures are used to determine capability: (1) forage productivity, (2) inherently unstable soils, and (3) slopes steeper than 60 percent. Forage productivity is taken from TES map unit classifications across the Prescott NF using the corporate GIS data. Inherently unstable soils are described for appropriate map units in TES documentation. Inherently unstable soils are those that cannot support sufficient vegetation cover to slow erosion processes, even with management intervention. Slopes are determined from USGS information. Table 1 displays results of current grazing capability analysis.

Table 1. Results of Grazing Capability Analysis, Prescott National Forest

Characteristic	Acres	Note	Source
Gross Area of Prescott NF	1,410,335	This figure makes use of current corporate GIS data.	Corporate GIS data
Non-Prescott NF or land not administered by the Prescott NF	-154,284	These are private and other lands.	Corporate GIS data
Adjustments to Plan area: Tonto NF portion of Pine Mountain Wilderness	+11,464	The 1986 FEIS included the Prescott NF portion of the Sycamore Wilderness and Pine Mountain Wilderness in its entirety. Therefore, this analysis considers lands within the Prescott NF administrative boundary plus the portion of Pine Mountain Wilderness that is located on the Tonto NF.	
Net NF	**1,267,515**	This area represent the forest plan analysis area.	
Slopes > 60%	-15,400		USGS National elevation dataset at 10 meter resolution[1]
Soils that are Inherently Unstable[2]	-114,786	There may be some overlap with steep slopes	TES map unit descriptions
Forage productivity <100 lbs/ac-yr	-127,508		TES map unit classifications
Generally Capable Lands	**1,009,821**	This area is about 4% less than the pre-GIS calculation in the 1983 Analysis of the Management Situation.	

Using potential and full capacity grazing acreage listed in the 1983 Analysis of the Management Situation (p. 88), capable grazing lands were calculated at 1,047,943 acres. Comparison of this figure with the new calculation of capable acres (table 1) shows an approximate 4 percent difference from the capability determined in 1986.

Suitability

Suitability is the appropriateness of applying certain resource management practices to a particular area of land as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices. Land suitable for grazing is that which is accessible to livestock or wildlife, can be grazed on a sustained yield basis without damage to long-term productivity, and is compatible with desired conditions.

[1] http://ned.usgs.gov/

[2] This classification is displayed in TES under Landscape features and is an interpretation based on climate, soils, rock features, and slopes. It indicates conditions where annual soil renewability is less than soil loss under natural conditions described in Potential Plant Community in the TES document. Therefore, retention of vegetative cover may not slow erosion or soil creep processes even with management intervention, such as seeding.

The 1987 Forest Plan identified Management Area 7 as unsuitable for livestock grazing; it consisted of three recreation areas. In addition, the Prescott Municipal Watershed (Goldwater Lake) was excluded from grazing based on a 1924 agreement. Lane Mountain Watershed was also excluded, beginning in 1975. Desired conditions for these areas include management for their original purpose; thus, they will continue to be unsuitable for livestock grazing. A listing of areas and acreages using current information from the corporate GIS data is found in table 2.

Since the inception of the 1987 Forest Plan, 81 percent of land area (54 allotments) on the Prescott NF has received site-specific environmental review. Several areas were excluded from grazing in project-level decisions. Large, contiguous areas (at least 1,000 acres) that were excluded in site-specific NEPA decisions were deemed to be not suitable for livestock grazing for this suitability analysis. These areas are identified in the lower portion of table 2.

Table 2. Results of Grazing Suitability Analysis, Prescott National Forest

Area	Acres	Note
Lynx Lake Recreation Area	1,417	These areas are identified as unsuitable in the 1987 Forest Plan, as part of Management Area 7; or as part of municipal watershed agreements prior to 1987. Acres was determined using corporate GIS data.
Granite Basin Recreation Area and summer home group	1,615	
Verde Wild and Scenic River	1,515	
Prescott Municipal Watershed	10,889	
Lane Mountain Watershed	24,252	
Total	**39,688**	
Crown King Allotment (1990)	15,380	These are large grazing exclusions in site-specific NEPA decisions; year is indicated.
Big Bug Allotment (1997, 1998, 2005)	1,215	
Maverick Allotment (1998)	13,000	
Crooks Canyon Allotment (1998)	8,700	
Brady Allotment (2005)	1,920	
Cold Springs Allotment (2005)	10,806	
Burnt Ranch Allotment (2005)	4,048	
Goat Peak Allotment (2010)	1,986	
Total	**57,055**	

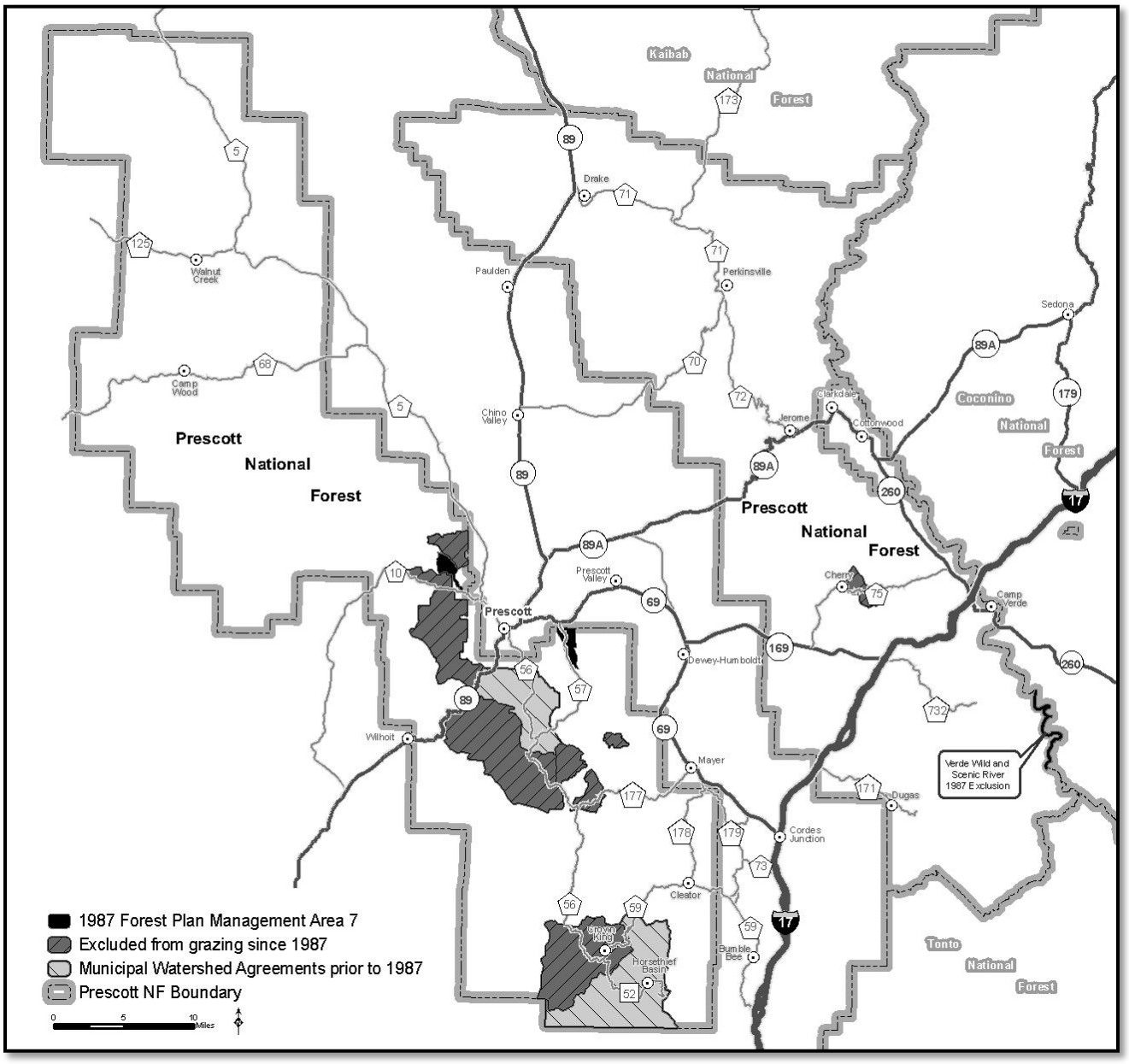
The area determined to be suitable for grazing in the 1986 Final Environmental Impact Statement, (p. 135) is listed as 977,834 acres. This was displayed in the 1987 Forest Plan as acres within each management area that were classified as full capacity rangelands. This was defined at the time as land that was accessible or that could become accessible to livestock, produced forage, and could be grazed on a sustained yield basis. Adjusting the suitable area figure (977,834 acres) by the sum of the recent grazing exclusions (57,055 acres), results in 920,779 acres of suitable grazing lands (see table 3).

Table 3. Results of Range Suitability Determination, Prescott National Forest

Type of Lands	Acres
Lands suitable for grazing from the 1987 Forest Plan	977, 834
Allotments where a portion of acreage have been excluded since the 1987 Forest Plan was approved:	-57,055
Lands suitable for producing forage for grazing animals, used in forest plan revision alternatives A, B, C, and D:	**920,779**

Figure 1 displays areas identified as unsuitable in the 1987 Forest Plan including: (1) areas that are a part of Management Area 7, (2) areas that are a part of municipal watershed agreements prior to 1987, and (3) areas excluded from grazing since 1987. The remainder of the Prescott NF displayed is suitable for grazing. Note that exclusions at the allotment or pasture level are not shown due to the scale of the map.

Figure 1. Large area grazing exclusions, Prescott National Forest



Definitions

Animal Unit (AU) - Considered to be one mature cow, approximately 1,000 pounds (450kg), either dry or with calf up to six months of age, or their equivalent, consuming about 26 pounds (12 kg) of forage on an oven-dry basis (Society for Range Management, 1998).

Animal Unit Month (AUM) - The amount of oven-dry forage (forage demand) required by one animal unit for a standardized period of 30 animal-unit-days. The term AUM is commonly used in three ways: (1) stocking rate, as in "X acres per AUM"; (2) forage allocations as in "X AUMs in Allotment A"; and (3) utilization, as in "X AUMs taken from Unit B" (Society for Range Management, 1998).

Browse - (1) The part of shrubs, half shrubs, woody vines, and trees available for animal consumption or (2) to search for or consume browse (Coulloudon et al, 1999).

Carrying Capacity - The average number of livestock and/or wildlife that may be sustained on a management unit compatible with management objectives for the unit. In addition to site characteristics, it is a function of management goals and management intensity (Society for Range Management, 1998).

Forage -Browse and herbage which is available and can provide food for animals or be harvested for feeding (Coulloudon et al, 1999).

Herbage - The above-ground material of any herbaceous plant (Coulloudon et al, 1999).

Forage Utilization - The portion of current year's forage production by weight that is consumed or destroyed by animals (including insects). Syn., degree of use. Expressed in percent of current year's growth utilized by grazing animals on an average over time based on a system of range management that will maintain the key forage species while achieving other management objectives such as the maintenance of watersheds, wildlife habitat, and recreational values and the protection of regenerating plants (Coulloudon et al, 1999 and Society for Range Management, 1998).

Grazing permittee - The recipient of a grazing permit.

Non-structural range improvement - An improvement to rangeland consisting of modification of existing vegetation. Examples are spraying or plowing followed by seeding to grass.

Grazing Capability Classes - Levels are described as follows:

- **No Capability (NC)** - No capability areas are those which cannot be used by animals without long-term damage to the soil resource or plant community; or are barren and unproductive naturally. These areas are not capable of being grazed by domestic livestock under reasonable management goals. Grazing capacity will not be assigned to these areas, even though light livestock use may occur.
- **Potential Capability (PC)** - Areas which could be used by grazing animals under proper management but where soil stability is impaired or range improvements are not adequate under existing conditions to obtain necessary grazing animal distribution. The area is not capable of being fully or adequately utilized by grazing animals.

- **Full Capability (FC)** - Full capability areas are those which can be used by grazing animals under proper management without long-term damage to the soil resource or plant communities.

Range Condition - Condition that is evaluated and ranked by the Forest Service; it is a subjective expression of the status of health of the vegetation and soil relative to their combined potential to produce a sound and stable biotic community (Forest Service, 1996).

Satisfactory Range Condition - The status or health of the vegetation and soil relative to their combined potential to produce a sound and stable biotic community as evaluated relative to desired conditions; deemed meeting or moving towards those desired conditions. (adapted from Forest Service, 1996).

Un-Satisfactory Range Condition - The status or health of the vegetation and soil relative to their combined potential to produce a sound and stable biotic community as evaluated relative to desired conditions; deemed not meeting or moving towards those desired conditions. (adapted from Forest Service, 1996).

Wetlands - Habitat that is transitional between terrestrial and aquatic, where the water table is usually at or near the land surface or the land is covered by shallow water. Wetlands have one or more of the following characteristics: (1) at least periodically, the land supports predominantly hydrophytic plants; (2) the substrate is predominantly undrained hydric soil; (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year (Forest Service Manual 2600).

Winter Range - Rangeland that is grazed during the winter months.

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